

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A method for forming a multi-layer wiring structure, comprising the following steps:

etching via-holes or wiring gutter through a resist mask on a silica based interlayer insulator ~~insulating film between layers~~ having dielectric constant being equal to or less than 3.5 said silica based interlayer insulator containing carbon from 5 % by atomic weight to 25 % by atomic weight;

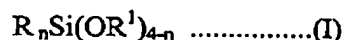
performing an ashing process on said resist mask using oxygen gas plasma under an atmospheric pressure from 0.01 Torr to 30.0 Torr; and

filling up said wiring gutters or said via-holes with conductive material using a damascene method.

2. (Cancelled)

3. (Cancelled)

4. (Currently Amended) A method for forming a multi-layer wiring structure, as described in claim 1, wherein said silica based interlayer insulator ~~insulating film between layers~~ is formed by coating and baking a coating liquid including a chemical compound, being obtained through hydrolysis and condensation reaction of at least one kind of alkoxysilane compounds in organic solvent under presence of an acid catalyst, wherein said one kind of alkoxysilane compounds is selected from alkoxysilane compounds expressed by the following general equation(I):



wherein, R in the general equation (I) indicates an alkyl group having carbon number from 1 to 4 or an aryl group, R¹ indicates an alkyl group having carbon number from 1 to 4, and n indicates an integer from 1 to 2.

5. (Previously Presented) A method for forming a multi-layer wiring structure, as described in claim 4, wherein said coating liquid contains hydrolysis co-condensate being obtained by reacting monoalkyl-trialkoxysilane from 2 mol to 6 mols with 1 mol of tetraalkoxysilane in the organic solvent in the presence of the acid catalyst.

6. (Previously Presented) A method for forming a multi-layer wiring structure, as described in claim 4, wherein said coating liquid contains hydrolysis co-condensate being obtained by reacting tetraalkoxysilane from 0.5 mol to 4 mols and monoalkyl-trialkoxysilane from 0.5 mol to 4 mols with 1 mol of dialkyl-dialkoxysilane in the organic solvent in the presence of the acid catalyst.

7. (Previously Presented) A method for forming a multi-layer wiring structure, as described in claim 4, wherein said coating liquid contains hydrolysis condensate of a ladder type obtained from monoalkyl-trialkoxysilane.

8. (currently Amended) A method for forming a multi-layer circuit board, as described in claim 1, wherein said silica based interlayer insulator ~~insulating film between layers~~ is formed by coating with a coating liquid, and baking said coating liquid, which is obtained from a solution of a solvent of alkylene glycol-dialkyl ether containing acid hydrolysis condensation product of trialkoxysilane, and which shows an increase in weight when performing thermogravimetric measurement on a component forming the film after removing the solvent.

9. (Cancelled)

10. (Cancelled)